

IMMATURE STAGES OF *SINOPLA PERPUNCTATUS* (HETEROPTERA: ACANTHOSOMATIDAE) FROM ARGENTINA¹

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ABSTRACT: The five instars of the acanthosomatid *Sinopla perpunctatus* are described and illustrated. Descriptions include morphological and morphometric characters of specimens from Neuquen (Argentina) collected on *Nothofagus* sp. (Fagaceae).

KEY WORDS: *Sinopla perpunctatus*, Heteroptera, Acanthosomatidae, immature stages, Argentina.

The family Acanthosomatidae, a member of the superfamily Pentatomoidea, contains about 180 species in 45 genera (Kumar, 1974; Rolston and Kumar, 1974). Its geographic range is mostly in the Southern Hemisphere, but it does extend north into Europe, Asia, and North America. The genus *Sinopla* Signoret 1863 belongs to the Blaudisinae, a subfamily that occurs in South America, South Africa, and Australia, with one genus recorded from Madagascar. *Sinopla perpunctatus* is restricted to the southern portion of the Western Hemisphere (Chile and Argentina). Little is known about the biology of most austral species (Schuh and Slater, 1995). Recently, Carter and Hoebeke (2003) described in detail the seasonal history and duration of the immature stages of *Elasmotherus atricornis* Van Duzee, which is distributed in the Palaearctic, Oriental, and Australian Regions extending to the Nearctic. Maternal care of eggs and young nymphs has been mentioned only for Nearctic and Palearctic species. (Bequaert, 1935). In this contribution, we describe the five nymphal instars of *Sinopla perpunctatus* Signoret.

METHODS

We studied a total of 21 specimens from Neuquen (Argentina), collected on *Nothofagus* sp. (Fagaceae), a genus distributed in the southernmost regions of the Western Hemisphere (34°S to Tierra del Fuego). The material was preserved in 75 percent ethanol. Terminology used for morphology follows that of Miller (1971) and Decoursey and Esselbaugh (1962). Measurements are given in millimeters. Illustrations were made with a drawing tube on a Wild M-stereomicroscope. Scanning electron micrographs were made from specimens mounted on stubs, sputter-coated with a gold palladium alloy, and studied with a JEOL T-100 SEM. The studied material is deposited in the Museo de Ciencias Naturales de La Plata (Argentina).

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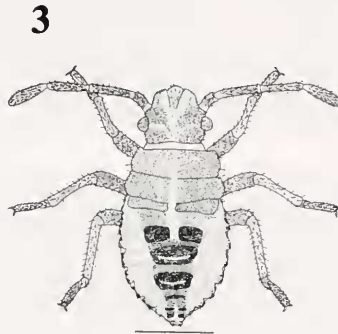
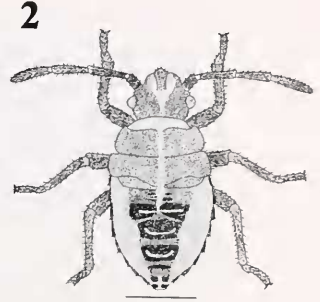
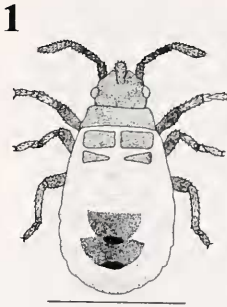
DESCRIPTIONS

First instar (Fig. 1). Total length 2.00 ($n = 1$). Length of head 0.47, width 0.48. Head dark brown dorsally, reddish posteriorly, brown ventrally; setae short, sparsed. Clypeus and jugae dark brown. Clypeus broadly surpassing jugae. Eyes prominent, rounded; red, whitish posteriorly. Width of eye 0.48, interocular space 0.32. Rostrum brown, surpassing mesocoxae. Rostral length 0.88, ratio of segment lengths approximately 1: 1.66: 1.55: 1.66. Antennae brown, yellowish at the base and apex of the articulations; setose, abundant distally. Antennal length 0.684, ratio of segment lengths approximately 1: 1.56: 1.14: 2.14. Pronotum dark brown with median sulcus pale; length 0.22, width 0.53; rectangular. Meso and metanotum dark brown. Pale brown ventrally. Legs pale; setae short, abundant on tarsi and tibiae. Abdominal length 1.05, width 0.92. Abdomen pale brown, dorsally tinged with red and two large red spots medially; plates as in Figure 1. Pale brown ventrally, tinged with red; last segments with a brown spot medially.

Second instar (Fig. 2). Total length 3.50 ($n = 1$). Length of head 0.92, width 1.03. Head brown dorsally, pale brown medially and ventrally; setae short, sparsed. Clypeus and jugae pale brown. Eyes prominent, rounded; red, whitish posteriorly. Width of eye 0.15, interocular space 0.73. Rostrum pale brown, segment I laterally and segment IV darker; surpassing metacoxae. Rostral length 2.18, ratio of segment lengths of ca. 1:1.42:1.34:1.27. Antennae brown, yellowish at articulations; setose, more abundant distally. Antenna 1.95 long, ratio of segment lengths ca. 1: 2.34: 2.07: 2.40. Pronotum brown, with median sulcus pale; length 0.40, width 1.28; rectangular, with posterior borders rounded; setae sparsed. Wing pad length 0.52. Wing pad and area between brown. Sternum pale brown. Legs brown; setae short, abundant on tarsi and tibiae. Abdominal length 1.67, width 1.52. Abdomen dorsally pale brown, tinged with red and red spots; dorsal plates as in Figure 2; pale brown ventrally, external fringe reddish; setae median, sparsed.

Third instar (Fig. 3). Total length 3.70-4.11 (mean = 3.91) ($n = 10$). Length of head 0.83-1.00 (mean = 0.92), width 1.07-1.13 (mean = 1.09). Head brown dorsally (in some specimens dark brown), pale brown medially, forming v-shaped mark; pale brown ventrally; with sparsed and short setae. Jugae pale brown, darker laterally. Clypeus pale brown (in some specimens dark brown). Labrum dark brown. Eyes prominent, rounded; red, whitish posteriorly. Width of eye 0.17-0.18 (mean = 0.18), interocular space 0.73-0.77 (mean = 0.75). Rostrum pale brown (in some specimens dark brown), segment I laterally and distally and segment IV darker; reaching the metacoxae. Rostral length 1.90-2.07 (mean = 2.00), ratio of segment lengths ca. 1: 1.32: 1.38: 1.20. Antennae brown (in some specimens dark brown), creamy at articulations; segment IV fusiform; setose, distally abundant. Antennal length 1.62-2.07 (mean = 1.90), ratio of segment lengths ca. 1: 2.86: 2.32: 2.41. Pronotum brown (in some specimens dark brown) with median sulcus pale; length 0.40-0.47 (mean = 0.44), width 1.28-1.65 (mean = 1.42); rectangular, with their posterior borders rounded; humeral angles projected laterally (Fig. 3); setae median, sparsed. Wing pad length 0.42-0.60 (mean = 0.53); brown (in some specimens dark brown); setae median, sparsed. Sternum pale brown, tinged with red ventrally. Legs pale brown to dark brown; setae short and median, abundant on tarsi and tibiae. Abdominal length 1.75-2.23 (mean = 2.00), width 1.17-2.53 (mean = 1.92). Abdomen globose; dorsally pale brown, tinged with red and red spots; dorsal plates as in Figure 3. Pale brown ventrally, fringe lateral reddish; spiracles present on segments 2 to 8 laterally; setae median, sparsed.

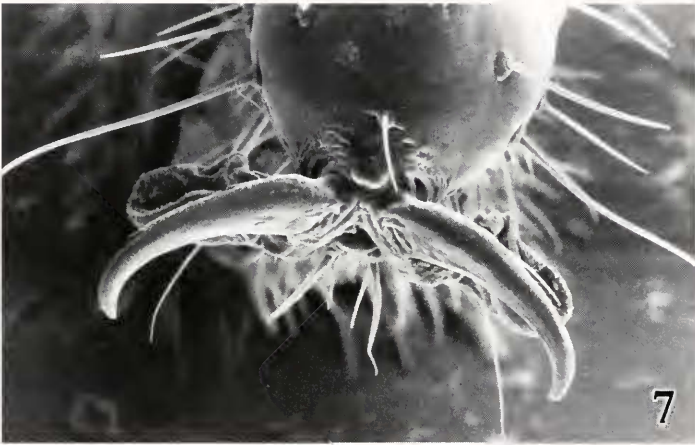
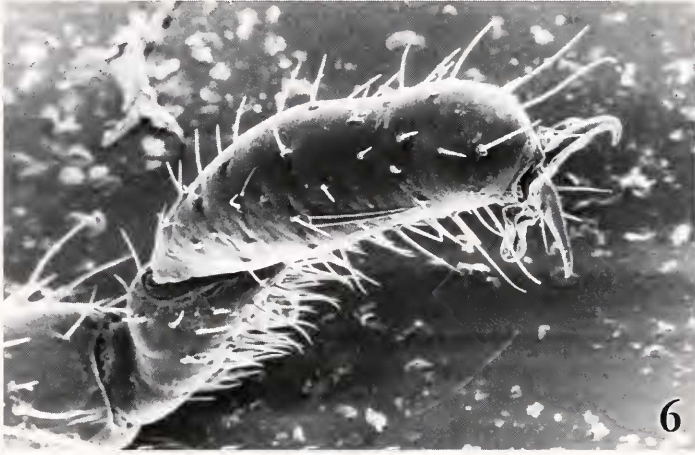
Fourth instar (Fig. 4). Total length 4.11-5.44 (mean = 4.89) ($n = 8$). Length of head 1.00-1.33 (mean = 1.18), width 1.33-1.60 (mean = 1.49). Head brown dorsally; laterally, with a dark spot behind the eyes; pale brown ventrally; setae short, sparsed. Clypeus pale brown, tinged with red, whitish distally. Juga pale brown tinged with red, dark brown laterally. Labrum dark brown. Eyes red; rounded, prominent. Width of eye 0.20-0.30 (mean = 0.26), interocular space 0.92-1.05 (mean = 0.97). Rostrum pale brown, darker at apex; reaching the metacoxae. Rostral length 2.28-3.23 (mean = 2.71), ratio of segment lengths ca. 1: 1.51: 1.40: 1.21. Antennae dark brown, yellowish at the articulations; setose, distally abundant. Antennal length 2.42-3.05 (mean = 2.71), ratio of segment lengths ca. 1: 3.00: 2.37: 2.67. Pronotum dark brown, median sulcus pale; length 0.63-0.92 (mean = 0.74), width 1.07-2.53 (mean = 2.16); punctuate; anterolateral angles projected laterally; setae short, sparsed. Meso- and metatergum dark brown, median sulcus pale; punctate; setae short, sparsed. Wing pad length 0.92-1.23 (mean = 1.08); dark brown; punctuate; setae median, sparsed. Ventrally pale brown, tinged with red; prosternum with two red spots antero-laterally. Legs pale brown, femora and tarsi darker; setae short and median, longer on tarsi and tibiae; abundant on tarsi and tibiae. Mid tarsi and pulvilli and parempodia as seen in Figures 6-7 respectively. Abdominal length 1.68-2.53 (mean = 2.21), width 2.27-3.03 (mean = 2.57). Abdomen red, tinged with pale brown dorsally; medially with dark



Figs. 1-5: 1, First instar. 2, Second instar. 3, Third instar. 4, Fourth instar. 5, Fifth instar. Scale line: 1 mm.

plates arranged as in the Figure 4; pale brown ventrally, margin narrowly reddish, with brown spots on the distal segments; setae median, sparsed.

Fifth instar (Fig. 5). Total length 6.96 (n= 1). Length of head 1.29, width 2.00. Head brown, tinged with red in the vertex; redline ocelli present; outer posterior margin of eyes dark brown; pale brown ventrally, with two reddish bands laterally; setae short and median, sparsed. Jugae laterally dark brown and mesially reddish; ventrally with a dark fringe. Clypeus reddish, distally whitish. Labrum dark brown; setae short. Eyes prominent, rounded; red, posteriorly whitish. Width of eye 0.18, interocular space 0.47. Rostrum pale brown; segment I basally tinged with red; reaching the metacoxae. Rostral length 3.45, ratio of segment lengths ca. 1: 1.56: 1.36: 1.12. Antennae pale brown, segments I and II tinged with pale red; setae sparsed on segments I and II, abundant and thinner on segments III and IV. Antenna 3.67 long, ratio of segment lengths ca. 1: 3.50: 2.66: 2.50. Pronotum



Figs. 6-7. Scanning electron micrographs. Fourth instar: 6. Tarsi x 150; 7. Pretarsi (pulvillus, parempodia, and claws). x 350.

pale brown, tinged with red; median sulcus pale; length 1.00, width 3.48; punctate; setae short and median, sparsely. Meso- and metatergum pale brown, median sulcus pale; punctate; setae median. Area between wing pad pale brown, tinged with red; punctate. Ventrally pale brown, tinged with red; prosternum with two red spots antero-laterally. Wing pad length 2.87; pale brown, reddish laterally, mesially dark brown; punctate; setae short and median, sparsely. Legs pale; pretarsus dark brown distally; setae short and median, sparsely, abundant on tarsi and tibiae. Abdominal length 2.85, width 4.43. Abdomen pale brown, dorsally tinged with red and whitish areas; dorsal and lateral plates dark. Ventrally pale brown, with narrow reddish margin, surrounded by whitish spots; spiracle 2 to 8 lateral; setae long, sparsely.

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